

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 3946PTWO/er	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2004/051068	International filing date (day/month/year) 09/06/2004	(Earliest) Priority Date (day/month/year) 09/06/2003
Applicant PIETRANGELO, Antonello		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☒ **Certain claims were found unsearchable** (See Box II).

3. ☒ **Unity of invention is lacking** (see Box III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

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Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
 - a. type of material
 - ☒ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☒ in written format
 - ☒ in computer readable form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed
 - ☐ filed together with the international application in computer readable form
 - ☒ furnished subsequently to this Authority for the purpose of search
2. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 30, 34-43 (all partially), 45, 49
because they relate to subject matter not required to be searched by this Authority, namely:
Although claims 30 and 34-43 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the subject-matter of said claim wherein the step carried out in the human/animal body has been excluded
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

2-4 (all completely) 1, 11-32, 34-52 (all partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: claims 2-4 (all completely) 1, 11-32, 34-52 (all partially)

Invention 1: (use of) polynucleotides (vectors, cells and kits comprising them) as well as peptides, and antibodies against them, coding for a ferroportin1 mutated in amino acid position 80 of SEQ ID No. 2; methods using them to detect ferroportin1 mutated in the amino acid position 80 of SEQ ID No. 2

2. claims: claims 5-7 (all completely), 1, 11-32, 34-52 (all partially)

Invention 2: (use of) polynucleotides (vectors, cells and kits comprising them) as well as peptides, and antibodies against them, coding for a ferroportin1 mutated in amino acid position 174 of SEQ ID No. 2; methods using them to detect ferroportin1 mutated in the amino acid position 174 of SEQ ID No. 2

3. claims: claims 8-10, 33 (all completely), 1, 11-32, 34-52 (all partially)

Invention 3: (use of) polynucleotides (vectors, cells and kits comprising them) as well as peptides, and antibodies against them, coding for a ferroportin1 mutated in amino acid position 248 of SEQ ID No. 2; methods using them to detect ferroportin1 mutated in the amino acid position 248 of SEQ ID No. 2

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS, Sequence Search, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE GENESEQ 24 February 1999 (1999-02-24), JARVIS ET AL.: "Human c-fos hammerhead ribozyme nucleotide position 822" XP002306181 retrieved from EBI Database accession no. AAV95488 the whole document & WO 98/32846 A (RIBOZYME PHARM INC) 30 July 1998 (1998-07-30) page 51; claim 9	15, 17-27, 44,50,51
X	----- WO 03/002589 A (HEUTINK PETER ; OOSTRA BEN A (NL); UNIV ERASMUS (NL); VAN DUIJN COCK M) 9 January 2003 (2003-01-09) the whole document ----- -/--	52

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

26 November 2004

Date of mailing of the international search report

19.05.2005

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NJAJOU OMER T ET AL: "A mutation in SLC11A3 is associated with autosomal dominant hemochromatosis" NATURE GENETICS, vol. 28, no. 3, July 2001 (2001-07), pages 213-214, XP008039160 ISSN: 1061-4036 the whole document -----	1-3, 11-13, 16,28, 29,42, 43, 46-48, 50-52
A	WALLACE DANIEL F ET AL: "Novel mutation in ferroportin1 is associated with autosomal dominant hemochromatosis" BLOOD, vol. 100, no. 2, 15 July 2002 (2002-07-15), pages 692-694, XP002306179 ISSN: 0006-4971 the whole document -----	1-3, 11-13, 16,28, 29,42, 43, 46-48, 50-52
A	MONTOSI GIULIANA ET AL: "Autosomal-dominant hemochromatosis is associated with a mutation in the ferroportin (SLC11A3) gene" JOURNAL OF CLINICAL INVESTIGATION, vol. 108, no. 4, August 2001 (2001-08), pages 619-623, XP002306180 ISSN: 0021-9738 the whole document -----	1-3, 11-13, 16,28, 29,42, 43, 46-48, 50-52

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Information on patent family members

International Application No

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9832846	A	30-07-1998	US	6103890 A		15-08-2000
			AU	6031598 A		18-08-1998
			WO	9832846 A2		30-07-1998

WO 03002589	A	09-01-2003	US	2003082553 A1		01-05-2003
			EP	1409511 A1		21-04-2004
			WO	03002589 A1		09-01-2003

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